BROOKHAVEN NATIONAL LABORATORY

Work Permit # _____
Work Order # _____
Job# _____ Activity# _____

1. Work requester fills out this section. ☐ **Standing Work Permit**

Requester: Robert PIsani	Date: 1/22/2008	Ext.: 5301	Dept/Div/Group: PO
Other Contact person (if different from requester): Carter Biggs			Ext.: 7515
Work Control Coordinator: Don Lynch		Start Date: 1/28/2008	Est. End Date: 1/28/2008
Brief Description of Work: Tap into DC supply in a way to flow either 50/50 AR/Ethatne or 50/50 Ar//Ethane +1%alcohol			
Building: 1008	Room: IR	Equipment: Fittings/hand tools	Service Provider: n/a

2. WCC, Requester/Designee, Service Provider, and ESS&H (as necessary) fill out this section or attach analysis

ESS&H ANALYSIS				
Radiation Concerns	☒ None	☐ Activation	☐ Airborne	☐ Contamination	☐ Radiation	☐ Other
☐ Special nuclear materials involved, notify Isotope Special Materials Group			☐ Fissionable materials involved, notify Laboratory Criticality Officer	
Radiation Generating Devices:	☐ Radiography	☐ Moisture Density Gauges	☐ Soil Density Gauges	☐ X-ray Equipment
Safety and Security Concerns	☒ None	☐ Explosives	☐ Transport of Haz/Rad Material	
☐ Adding/Removing Walls or Roofs	☐ Critical Lift	☐ Fumes/Mist/Dust*	☐ Magnetic Fields*	☐ Pressurized Systems
☐ Asbestos*	☐ Cryogenic	☐ Heat/Cold Stress	☐ Nanomaterials/particles*	☐ Railroad Work
☐ Beryllium*	☐ Electrical	☐ Hydraulic	☐ Noise*	☐ Rigging
☐ Biohazard*	☐ Elevated Work	☐ Lasers*	☐ Non-ionizing Radiation*	☐ Security Concerns
☐ Chemicals/Corrosives*	☐ Excavation	☐ Lead*	☐ Oxygen Deficiency*	☐ Suspect/Counterfeit Items
☐ Confined Space*	☐ Ergonomics*	☐ Material Handling	☐ Penetrating Fire Walls	☐ Vacuum
* Industrial Hygiene (IH) Review Required				☐ Other
Environmental Concerns		☒ None	☐ Work impacts Environmental Permit No.	
☐ Atmospheric Discharges (rad/non-rad)		☐ Land Use Institutional Controls	☐ Soil Activation/contamination	☐ Waste-Mixed
☐ Chemical or Rad Material Storage or Use		☐ Liquid Discharges	☐ Waste-Clean	☐ Waste-Radioactive
☐ Cesspools (UIC)		☐ Oil/PCB Management	☐ Waste-Hazardous	☐ Waste-Regulated Medical
☐ High water/power consumption		☐ Spill potential	☐ Waste-Industrial	☐ Underground Duct/Piping
Waste disposition by:				☐ Other
Pollution Prevention (P2)/Waste Minimization Opportunity:		☒ No ☐ Yes		
FACILITY CONCERNS	☐ **None**			
☐ Access/Egress Limitations	☐ Electrical Noise	☒ Potential to Cause a False Alarm		☐ Vibrations
	☐ Impacts Facility Use Agreement		☐ Temperature Change	☐ Other
☐ Configuration Control	☐ Maintenance Work on Ventilation Systems		☐ Utility Interruptions	
WORK CONTROLS				
Work Practices				
☐ None	☐ Exhaust Ventilation	☒ Lockout/Tagout	☐ Spill Containment	☐ Security (see Instruction Sheet)
☐ Back-up Person/Watch	☐ HP Coverage	☐ Posting/Warning Signs	☐ Time Limitation	☐ Other
☐ Barricades	☐ IH Survey	☐ Scaffolding-requires inspection	☐ Warning Alarm (i.e. "high level")	
Personal Protective Equipment				
☐ None	☐ Ear Plugs	☒ Gloves	☐ Lab Coat	☐ Safety Glasses
☐ Coveralls	☐ Ear Muffs	☒ Goggles	☐ Respirator*	☐ Safety Harness
☐ Disposable Clothing	☐ Face Shield	☐ Hard Hat	☐ Shoe Covers	☒ Safety Shoes ☐ Other
Permits Required (Permits must be valid when job is scheduled.)				
☒ None	☐ Cutting/Welding	☐ Impair Fire Protection Systems		
☐ Concrete/Masonry Penetration	☐ Digging/Core Drilling	☐ Rad Work Permit-RWP No		
☐ Confined Space Entry	☐ Electrical Working Hot	☐ Other		
Dosimetry/Monitoring				
☒ None	☐ Heat Stress Monitor	☐ Real Time Monitor	☐ TLD	
☐ Air Effluent	☐ Noise Survey/Dosimeter	☐ Self-reading Pencil Dosimeter	☐ Waste Characterization	
☐ Ground Water	☐ O_2/Combustible Gas	☐ Self-reading Digital Dosimeter	☐ Other	
☐ Liquid Effluent	☐ Passive Vapor Monitor	☐ Sorbent Tube/Filter Pump		
Training Requirements (List specific training requirements)				
Compressed Gas-Qualified Worker, Collider User Training,PHENIX Awareness Training				
Based on analysis above, the Walkdown Team determines the risk, complexity, and coordination ratings below:			**If using the permit when all hazard ratings are low, only the following need to sign: (Although allowed, there is no need to use back of form)**	
ESS&H Risk Level:	☒ Low ☐ Moderate ☐ High		WCC:	Date:
Complexity Level:	☒ Low ☐ Moderate ☐ High		Service Provider:	Date:
Work Coordination:	☐ Low ☒ Moderate ☐ High		Authorization to start	Date:
			(Departmental Sup/WCC/Designee)	

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, and personnel availability need to be addressed): See attached sheet
Special Working Conditions Required (e.g., Industrial Hygiene hold points or other monitoring) None
Notifications to operations and Operational Limits Requirements: No
Post Work Testing, Notification or Documentation Required: No

Job Safety Analysis Required: ☐ Yes ☒ No	Walkdown Completed (Required): ☒ Yes

Reviewed by: Primary Reviewer signature means that the hazards and risks that could impact ESS&H have been identified, a Walkdown was completed and the hazards will be controlled according to BNL requirements.

Title	Name (print)	Signature	Life #	Date
Primary Reviewer				
ES&H Professional				
Building Manager				
Service Provider				
Work Control Coordinator	Don Lynch		20146	
Other				
	Review Done: ☐ in series	☐ team		

4. Job site personnel fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments).			
Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:
Workers are encouraged to provide feedback on ESS&H concerns or on ideas for improved job work flow. Use feedback form or space below.			

5. Department/Division Line Manager or Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)			
Name:	Signature:	Life#:	Date:

6. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)

a) WCM/WCC: Are there any changes as a result of worker feedback? ☐ Yes ☐ No

Note: See work planning and control subject area section 2.6.

7. Post Job Review/Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of work area to work supervisor.) The WCC ensures that the change process to update drawings, placards, postings, procedures, etc. are initiated , if necessary.

Name:	Signature:	Life#:	Date:
Comments:			

DC/PC Gas supply modification **Work Permit #_____**

Introduction:

The Pad Chamber (PC) detector subassembly at PHENIX has experienced operating troubles due to radiation damage (aging). It has been determined that adding ethyl alcohol to the current operating gas mixture (similar to what is currently used for the PHENIX Drift Chamber (DC) detector subassembly) will mitigate the present problems and prevent recurrence.

Notes: Both the DC and PC PHENIX detector subassemblies are designed for 50/50 Argon/Ethane mixtures with 1% added ethanol. The PC system was isolated from the DC system about 5 years ago to allow it to run without the added ethanol. Since the PC flow rate is less than 40% of the DC flow rate, the additional alcohol flowed will be less than 40% more than the DC already flows (currently ~ 1 liter [liquid] per week) . Since both systems already flow 50% flammable gas and both systems are fully instrumented for flammable gas leak detection and fire detection, there is no need to re-qualify (blue sheet) the PHENIX safety system.

Precautions:

Two man rule applies to work in IR. Job must be completed during the 8hr access time.

Equipment needed

Fittings, hand tools and some Cu tubing will be needed.

Procedure:

Note: All work to be supervised by R. Pisani. Flammable gas safety system bypass to be requested from C-A by P. Giannotti, who will continuosly monitor the system while it is in bypass.

1) Inert input lines before works starts. (PHENIX standard purge procedure)

2) LOTO flammable gas flowmeters.

3)Place PHENIX flammable gas safety alarms into by-pass mode while work is being performed. (C-A safety personnel to place system in bypass when contacted by P. Giannotti.)

4) Close all detector input and output valves.

5) Remove fittings on current supplie lines. (Note:at this point a hand held flammable gas sensor should be used to monitor the opened lines.)

6) Install tees and valves as illustrated in the sttached sheet. (Note: fittings shall be mechanically sealing -e.g. Swagelok- . No brazing permitted.)

7) Once system is closed, pressurize lines with argon and teste for leaks.

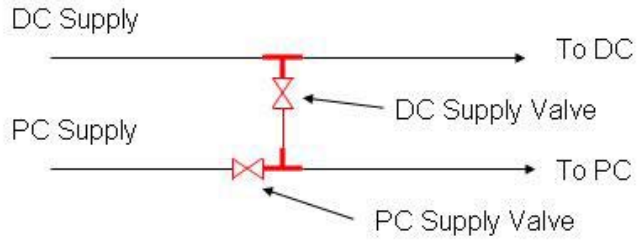
8)Once tested, remove PHENIX flammable gas safety alarms from bypass mode and remove LOTO from gas flowmeters. (C-A safety personnel to remove system from bypass when contacted by P. Giannotti.)

9) Restore flow of operating gas.

10) After 15 minutes of flowing operating gases, re-check all lines with a hand held flammable gas detector.

Current Plan to Add Alcohol to PC

The current plan is to tap into the DC supply lines behind the East and West tracking chamber racks in the IR. Below is a drawing of how we plan to do this. Valves are being added to return the system back to its original configuration is needed. Actual photos are shown on the flowing 2 pages.



West Side


PC Supply Line
Reduce to ½" and Add PC Supply Valve
Add Tee to PC line and connect to DC Supply valve
Reduce to ½" and Add DC Supply Valve
Replace Elbow with ¾"Tee
DC Supply Line

East


PC Supply Line
Reduce to ½" and Add PC Supply Valve
Add Tee to PC line and connect to DC Supply valve
Reduce to ½" and Add DC Supply Valve
Replace Union with ¾" Tee
DC Supply Line